

Appl. No. 10/787,023
Amdt. Dated Feb. 3,2005
Reply to Office Action of November 3, 2004

REMARKS

Applicant appreciates the Examiner's indication of allowabilities of claim 5, 10-12 and 16.

Claim Rejections under 35 U.S.C. 102

Claim 1 is rejected under 35 U.S.C. 102(b) as being anticipated by Watanabe et al. (6,497,580).

Regarding to amended claim 1, the applicant provide a first printed circuit board, a second printed circuit board, a receiving slot in one of the first and the second printed circuit boards such that the first and the second printed circuit boards are orthogonally intersected with each other, and at least one electrical connector adjacent the receiving slot and in electrical connection with the first and the second printed circuit board, said at least one electrical connector having an insulative housing and a plurality of contacts received therein.

Referring to FIG. 1 of Watanabe et al., it discloses an electrical connector assembly comprising a first vertical circuit board 7, a second horizontal circuit board 13, a guide portion 14 defining a guide groove 15 being horizontally provided on each side of the first circuit board 7, (referring to column 6, line 40-44) and a connector 22 having a pair of hinges received in the guide groove 15 for electrically connecting the first and the second circuit boards 7, 13.

It is apparent that the "guide portion defining a guide groove" described in Watanabe et al. is additionally mounted on the first circuit board 7, in other word, the "guide portion defining a guide groove" is not a part of the first circuit board 7. While in claim 1 of the instant application, it defines a slot in one of the first and the second printed circuit board, that is the slot is a part of the printed

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circuit board, which is totally different from the disclosure of Watanabe et al.

Therefore, claim 1 is patentable over Watanabe et al.

Claims 1-4, 6-9 and 13-15 are rejected under 35 U.S.C. 102(b) as being anticipated by Lauchner et al. (5,190,462).

In response to the rejections above, the applicants has amended claim 1, 6, 13 and claim 14 to incorporate limitations. Claims 15-16 are cancelled.

Regarding to amended claim 1, the applicant provide a first printed circuit board, a second printed circuit board, a receiving slot in one of the first and the second printed circuit boards such that the first and the second printed circuit boards are orthogonally intersected with each other, and at least one electrical connector adjacent the receiving slot and in electrical connection with the first and the second printed circuit board, said at least one electrical connector having an insulative housing and a plurality of contacts received therein.

Referring to FIG. 7A-7C of Lauchner et al., it discloses a circuit board system including a first circuit board 30, a second circuit board 50, a plurality of slots being defined in one of the first and the second circuit boards 30, 50, a solder region 90, 92 or spring contact 70, 80 for electrically connecting the first and the second circuit boards 30, 50, which is totally different from the disclosure of Lauchner et al.

Therefore, claim 1 is patentable over Lauchner et al.

Claims 2-4 should be allowable since they are dependent from claim 1, directly or indirectly.

Regarding amended claim 6, the applicants provide a respective electrical connector having an insulative housing and a plurality of contacts received

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therein to electrically interconnect the first and the second printed circuit boards, which is located at least one of the four quadrants of every two orthogonally arranged printed circuit boards. However, Lauchner et al. failed to disclose the respective electrical connector explicitly or implicitly in figures or description. In contrary, Lauchner et al. **merely discloses employing solder region 90 or spring contact 70, 80** to interconnect the first and the second printed circuit boards. Apparently, claim 6 defines the respective electrical connector being distinguished from the solder region or spring contact and is thus believed to be patentable over Lauchner et al.

Claim 7 should be allowable since it is dependent from claim 6, directly.

Claim 8 should be allowable since it disclose the **first and the second quadrants** of every two orthogonally arranged printed circuit boards each have the electrical connector arranged therein. However, Lauchner et al. disclosed that the solder region or the spring contact were located in the **first and the third quadrants**. Thus, claim 8 is distinguished from Lauchner et al.

Claim 9 should be allowable since it discloses the connectors respectively **arranged in the first and the second quadrants** are **mirror image with respect to the second printed circuit board**. However, Lauchner et al. deposited the solder regions or the spring contacts at the **first and the third quadrants**. Apparently, the solder regions or the spring contacts arranged in the first and the third quadrants can not be mirror image with respect to the second printed circuit board. Thus, claim 9 is patentable over Lauchner et al.

Claims 10-12 should still be allowable since they are dependent from claim 6, indirectly.

Regarding to claim 13, applicants disclose an electrical system comprising a printed circuit board having a surface, a first group of conductive pads arranged on the first surface, a second group of conductive pads arranged on the surface and spaced from the first conductive traces, the first electrical connector mounted on

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the first group of the conductive traces, the first electrical connector defining a mating face, the second electrical connector mounted on the second group of the conductive traces, the second electrical connector defining a second mating face facing the first mating face.

Referring to FIG. 7C, Lauchner et al. discloses a printed circuit board 30 having a surface, a first group of conductive traces 100 mounted on the surface, a second group of conductive traces 102 on the surface and spaced from the first conductive traces 100, a first contact 96 mounted on the first group of the conductive 100, the first contact 96 defining a first mating face, a second contact 98 mounted on the second group of the conductive traces 102 and defining a second mating face. However, it is noted that the first mating face and the second mating face are at the same surface disclosed by Lauchner et al. Differently, claim 13 defines the first mating face facing the second mating face.

Therefore, claim 13 is patentable over Lauchner et al.

In response to the rejection about claim 14, applicants have amended claim 14 to incorporate limitations of claims 15, 16. Accordingly, claim 14 should now be formally allowed.

Claim 15 is cancelled.

Claim 16 is cancelled.

Claim 13 is rejected under 35 U.S.C. 102(b) as being anticipated by Cabourne (US 4,904,197).

Amended claim 13 defines an electrical system comprising a printed circuit board having a surface, a first group of conductive pads arranged on the first surface, a second group of conductive pads arranged on the surface and spaced from the first conductive traces, the first electrical connector mounted on the first

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group of the conductive traces, the first electrical connector defining a mating face, the second electrical connector mounted on the second group of the conductive traces. **The first and the second electrical connectors respectively comprise first and second contacts moveably contacting with the first and the second conductive pads.**

Referring to FIGS. 1, 2 and 11 of Cabourne, the electrical interconnection system disclosed therein comprise a printed circuit board (14) with solder pads (78) thereon and a pair o dielectric segments (22, 24) with contacts (20) retained therein. Each contact includes an inner end (33, 76) **soldered with** a corresponding solder pad of the printed circuit board. Differently, amended claim 13 defines that the contact **moveably** contacts with the conductive pad.

Further, column 2, lines 42-68 of Cabourne describes that a base 32 is employed to fix tail portions (30) of the contacts (20). Each frame element (22, 24) is supported by the tail portion on the base so that the frame can move horizontally, thereby actuating the terminals (28) of the contacts (20) to move between an open position and a closed position. A driving device (36) is located in the base to cooperate with the frame elements. In order to allow the driving device (36) working successfully, the inner pads (33, 78) of the contacts (20) must be fixedly connected with the printed circuit board (14), which **teaches away** from what is disclosed in the instant invention.

Thus, claim 13 is patentable over Cabourne.

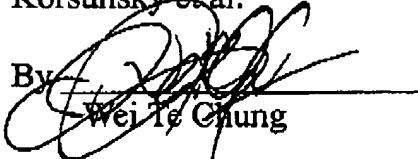
The newly added claim 17 should be allowable since it dependent from claim 13, directly.

In view of the above claim amendments and remarks, the subject application is believed to be in a condition for allowance and an action to such effect is earnestly solicited.

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